



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,944	12/12/2003	Jong Kil	A03P1079US02	3701
36802	7590	05/03/2006		EXAMINER
PACESSETTER, INC. 15900 VALLEY VIEW COURT SYLMAR, CA 91392-9221			EVANISKO, GEORGE ROBERT	
			ART UNIT	PAPER NUMBER
			3762	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/735,944	KIL ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	George R. Evanisko	3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 January 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-12 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, “is selected from the following group” is an improper Markush grouping. It is suggested to use “is selected from the group consisting of”.

In claims 11 and 12, “using an atrial electrode and a ventricular electrode” is vague and is inferentially including the electrodes. It is unclear if the electrodes are being positively recited or functionally recited. The examiner has interpreted the claims as containing the electrodes and the claims should be amended accordingly.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 7-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hedberg et al (5740811). Hedberg shows in figures 1 and 2 the use of cross chamber sensing (IEGM diff) and in figure 9 the cross chamber sensing (tip-can+SVC-can) and states that the synthesized ECG can use any combination of electrodes (columns 6 and 8). In addition, Hedberg

distinguishes portions and identifies transitions related to the atrial signals from those corresponding to the ventricular signals and adjusts the relative amplitudes of the portions corresponding to atrial and ventricular signals as seen in column 5, lines 38-52 using non-linear amplification, column 8, line 53-column 10, line 51, the description of figure 13 of using different weightings/scaling factors for the signal amplitudes corresponding to different atrial and ventricular signals/locations and the use of a neural network being trained with a surface ECG to adjust the cross chamber IEGM (columns 5 and 6) and therefore inherently adjusts the amplitudes of the atrial and ventricular signals since the signal is processed to be similar to the training surface ECG. For claims 2 and 3, since the system is trained with a surface ECG, uses non-linear amplification, and weightings/scaling factors, the system possesses a predetermined ratio, such as 1:4 to 1:10 (in the alternative, see the 103 rejection below for claim 3), since this is the ratio of a normal ECG. For claim 7, Hedberg discusses controlling the pacer or defibrillator with the synthesized ECG in columns 7 and 8, lines 1-10 and 10-14, respectively. For claims 8 and 9, Hedberg discusses the use of the IMD or an external device performing the adjustments/synthesizing in column 3, lines 1-13.

Claims 1-5 and 7-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Kroll et al (6813514). Kroll describes in columns 16 and 17 the use of cross chamber sensing. In addition, Kroll distinguishes portions and identifies transitions related to the atrial signals from those corresponding to the ventricular signals and adjusts the relative amplitudes of the portions corresponding to atrial and ventricular signals as seen in column 20, lines 30-32, column 20, line 47 to column 21, line 10, column 22, lines 20-30, and column 26, line 55-column 27, line 20. Since Kroll's cross chamber signal is a voltage signal and since Kroll uses weighting factors to

affect the voltages (col 19, lines 45-62) he will adjust the relative amplitudes corresponding to atrial and ventricular signals. In addition, Kroll trains his system with a surface ECG to adjust the cross chamber IEGM (columns 24-27) and therefore inherently adjusts the amplitudes of the atrial and ventricular signals since the signal is processed to be similar to the training surface ECG. For claims 2 and 3, since the system is trained with a surface ECG, the system possesses a predetermined ratio, such as 1:4 to 1:10 (in the alternative, see the 103 rejection below for claim 3) since this is the ratio of a normal ECG. For claim 5, Kroll identifies the ventricular depolarization and repolarization using the baseline as transition points (see figure 8). For claim 7, Kroll discusses controlling the IMD with the synthesized ECG in column 18, lines 51-65. For claims 8 and 9, Kroll discusses the use of the IMD or an external device performing the adjustments/synthesizing in column 4, lines 44-50.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hedberg et al (or for claims 3 and 6 over Kroll et al).

Hedberg or Kroll discloses the claimed invention except for predetermined ratio being 1:4 to 1:10, the use of the baseline before the depolarization/repolarization as transition points, and the use of the baseline before the depolarization as the transition point and a preceding R-R interval and time delay to identify a second baseline point for the transition point. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the ECG synthesizing system and method as taught by Hedberg or Kroll, with the predetermined ratio being 1:4 to 1:10, the use of the baseline before the depolarization/repolarization as transition points, and the use of the baseline before the depolarization as the transition point and a preceding R-R interval and time delay to identify a second baseline point for the transition point since: it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233); it was known in the art that ECG systems use the baseline before the depolarization/repolarization as transition points as conventional ways to effortlessly determine the depolarization/repolarization phases of the cardiac cycle; and the use of the baseline before the depolarization as the transition point and a preceding R-R interval and time delay to identify a second baseline point for the transition point to easily determine the depolarization phase of the cardiac cycle and to conventionally estimate the repolarization phase of the cardiac cycle since the repolarization phase is of lower amplitude and sometimes hard to detect.

***Double Patenting***

Claim 1 of this application conflicts with claim 7 of Application No. 10/736111. 37

CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822. Since claim 7 of 10/736111 contains all the limitations of claim 1 of this application, the claims contain the same limitations.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 6-16 of copending Application No. 10/736111. Although the conflicting claims are not identical, they are not patentably distinct

from each other because the copending application's claims are more narrow and meet the limitations of this application's claims. In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the copending application's claims the step/element of sensing cross chamber signals, using the baseline prior to the depolarization/repolarization, or using the baseline before the first R wave as the depolarization transition point and the preceding R-R interval and time delay to find the transition point for the repolarization since it provides a better signal representing the appearance of a surface ECG and provides more and different information to determine arrhythmias, since the baseline prior to the depolarization/repolarization is known to be the transition point in the ECG to simply determine the specific cardiac phases, and since the preceding R-R interval and time delay are used to determine the transition point for the repolarization to easily determine the repolarization phase since the repolarization is difficult to detect due to its small amplitude.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

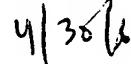
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Evanisko whose telephone number is 571 272 4945. The examiner can normally be reached on M-F 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Sykes can be reached on 571 272 4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
George R Evanisko  
Primary Examiner  
Art Unit 3762

  
GRE  
April 30, 2006